

Claims

1. A device for the UV treatment of fluids flowing in a flow channel, comprising a number of UV emitters, which are arranged in the flow channel, comprising sensor means having the construction of a UV sensor for monitoring the operating state of the emitters, and comprising at least one element for supplying power to the emitters and at least one unit, which is connected to the sensor means, for monitoring the emitters, wherein the element for supplying power to the emitters is configured to modulate an operating voltage of individual emitters or emitter groups that acts on the emitters during operation, and wherein the at least one unit, which is connected to the sensor means, for monitoring the emitters is configured to evaluate a modulation contained in the UV radiation that is emitted by the emitters.

2. The device as claimed in Claim 1, wherein the emitters are low-pressure mercury UV emitters, preferably having the construction of amalgam emitters.

3. The device as claimed in any one of the preceding claims, wherein the operating voltage of each emitter may be modulated individually.

4. The device as claimed in any one of the preceding claims, wherein the modulation is an amplitude modulation.

5. The device as claimed in any one of the preceding claims, wherein the modulation is evaluated by means of a Fourier transformation.

6. The device as claimed in any one of the preceding claims, wherein the emitters may be switched off individually for the purposes of calibration.

7. A method for the operation of a UV disinfection device comprising emitters, including the following steps:

a) supplying the emitters with an operating voltage for the purposes of ignition and for the continuous operation of the emitters;

b) modulating the operating voltage, the operating current or the electrical power of at least one emitter;

c) detecting the UV radiation that is emitted by the emitters using a UV sensor, which is capable of temporally resolving the modulation;

d) evaluating the signal recorded by the UV sensor;

e) checking whether the modulation in the signal issued by the UV sensor corresponds to a desired value.

5 8. The method as claimed in Claim 7, wherein, in step b), the modulation is carried out differently for each emitter.

9. The method as claimed in Claim 7, wherein, during operation, the emitters are operated in a substantially unmodulated manner and,
10 for checking an individual emitter, only this individual emitter is supplied with modulated operating voltage.

10. The method as claimed in Claim 9, wherein the modulation step is carried out in succession for all of the emitters.

15 11. The method as claimed in either Claim 9 or Claim 10, wherein the modulation step is repeated cyclically.

12. The method as claimed in any one of the preceding claims, wherein the operating voltage of the low-pressure mercury UV emitters
20 has a natural frequency in the range from 20 kHz to 1 MHz and wherein the modulation of the operating voltage is in the form of amplitude modulation at frequencies in the range from 100 Hz to 100 kHz.

13. The method as claimed in any one of the preceding claims, wherein adjacent emitters may be combined into groups, wherein the emitters of one group may jointly be modulated at similar frequencies, in particular at frequencies that are adjacent in a frequency grid.

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14. An electronic power supply unit for issuing an operating voltage for a low-pressure mercury emitter, wherein means are provided for applying a modulation to the operating voltage or the issued electrical power.

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15. The power supply unit as claimed in Claim 14, wherein the modulation is selectable with respect to the range, frequency and/or type of modulation as a function of an external control system.